Monsanto

DETERGENTS/PHOSPHATES DIVISION

Monsanto Chemical Company
P.O. Box 816
Soda Springs, Idaho 83276
Phone: (208) 547-3391

December 12, 1991

Our ref: 913-1101.104

United States Environmental Protection Agency
1200 Sixth Avenue
Seattle WA 98101

ATTENTION: Mr. T. Brincefield, Superfund Project Manager

RE: RESPONSE TO YOUR LETTER OF NOVEMBER 21, 1991 REGARDING RI/FS WORK PLAN FOR MONSANTO SODA SPRINGS FACILITY

Dear Tim:

In response to your letter of November 21, 1991, Monsanto hereby submits a letter and supporting documentation from Golder Associates Inc. to resolve outstanding issues related to the Work Plan dated October 10, 1991.

If you have any questions please contact me or either Bill Wright or David Banton at Golder Associates.

Sincerely,

for David Banton

Robert L. Geddes
Senior Environmental Engineer

c.c. Boyd Roberts, IDHW
Jim Eldridge, SAIC

6302

Golder Associates Inc.
CONSULTING ENGINEERS

December 12, 1991 Our ref: 913-1101.104

Monsanto Company
P.O. Box 816
Soda Springs, ID 83276

ATTENTION: Mr. R.L. Geddes, Senior Environmental Engineer

RE: RESPONSE TO EPA LETTER OF NOVEMBER 21, 1991
REGARDING RI/FS WORK PLAN

Dear Bob:

The purpose of this letter is to address each of the points raised by EPA in their letter of November 21, 1991 in which they approved the RI/FS Work Plan dated October 10, 1991 subject to the resolution of seven issues. Each of EPA's issues are addressed separately below.

1) Analysis of Polonium in Sediment, Soil, and Source Material

Polonium has been added to the list of radiological parameters of interest in sediment, soil and source materials. Revised Tables 6-3, 6-4, and 6-8 are submitted with this letter. Accu-Labs are analyzing all soil, sediment and source materials for polonium-210.

2) Analysis Methods for Radionuclides in Sediment, Soil, and Source Material

The analytical methods used for the sediment, soil, and source materials have been modified from the original Work Plan. A revised Table 7-2 is attached to this letter.

3) Location-Specific ARARs

All preliminary ARAR evaluations discussed in the Work Plan will be reviewed and revised (if necessary) based on information gathered throughout the RI/FS process as described in Sections 6.1.9 and 6.2.6.

4) Validation of Environmental Data

Validation of environmental data is underway and is based on analytical levels defined by EPA[1]. All data validated by Golder for this project concurs with one of the following EPA recognized analytical levels:

- Level III - all analyses performed in an off-site analytical laboratory. Level III analyses may or may not use CLP procedures, but do usually utilize the validation or documentation procedures required for CLP Level IV analysis. The laboratory may or may not be a CLP laboratory.

- Level IV - CLP routine analytical services. All analyses are performed in an off-site CLP analytical laboratory following CLP protocols. Level IV is characterized by rigorous QA/QC protocols and documentation.

The following table summarizes the sampling event, date, analytical method employed and the validation process used to determine data quality.

Date Sampled	Collected by	Matrices	Analytical Level	Validation Method
1991	GAI	Soil Water	Level IV	EPA Laboratory Data Validation Functional Guidelines
1987	E&E	Water	Level IV	EPA Laboratory Data Validation Functional Guidelines
1985	GAI	Water	Level III	Limited validation based on QA/QC data availability using EPA Laboratory Data Validation Functional Guidelines
1984	GAI	Water	Level III	Limited validation based on QA/QC data availability using EPA Laboratory Data Validation Functional Guidelines
pre-1984 and 1985-1987	Monsanto	Water	Level III	Limited validation based on QA/QC data availability using EPA Laboratory Data Validation Functional Guidelines
Historical	Monsanto	Air	Level III	Qualitative validation of the most recent data based on documentation and adherence to EPA approved methods

Results of the environmental data validation and a summary of the data validation process will be included in the draft Phase I RI report (Preliminary Site Characterization Summary Report).

[1] EPA, 1988. Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses. U.S. Environmental Protection Agency, Washington, D.C.

5) Data Qualifiers for Appendix C Data Base

Golder Associates are in the process of converting the Appendix C groundwater data base into the format requested by EPA in the Consent Order. Data qualifiers have been added for the groundwater samples collected in November/December 1984 and February/March 1985 by Golder Associates and also to the samples collected by Ecology and Environment in 1987. For the remaining data, it appears as if the data cannot be validated in accordance with current EPA procedures.

We expect to supply EPA with a copy of the modified data base by December 21, 1991. Data from the October 1991 sampling round will be added to the data base once the data have been validated (probably in early January 1992).

6) Project Schedule

We have been notified by Chen Northern that the inorganic chemical data will be available between December 15, 1991 and December 31, 1991. However, the radiological analyses for water will not be available from Accu-Labs until January 3, 1992. Accu-Labs also indicate that radiological analyses for soils will not be available until January 31, 1992 (see attached letter). This is approximately one month behind our original schedule in the work plan. As a result, the submission of the Preliminary Site Characterization Summary Report will be delayed until the end of March 1992. A revised project schedule is included with this letter.

7) Air Dispersion Modeling

For this task, the sources at the facility will be subdivided into five categories, namely:

- Permitted point sources which have been tested for emission rates;
- Point sources which do not require permits and which have therefore not been tested for emissions (mainly baghouses);
- Fugitive dust from volume sources such as buildings and from source areas such as slag or underflow solids stockpiles;
- Fugitive dust emissions from hot slag transport and dumping operations; and
- Fugitive dust from process stockpiles and haul roads.

Each of the five categories will be modeled separately such that the contribution to total particulate emissions can be evaluated separately for each category of sources.

Golder proposes to utilize the following models to evaluate emissions from the facility:

- The Industrial Source Complex (ISC) model will be the primary analytical tool for evaluating the emissions from point and volume sources as well as from the transport and dumping of hot slag. The model will be run on an hour-by-hour

basis using one full year of meteorological data to calculate the highest and second-highest predicted ground concentrations, and to compute the average 24-hour, monthly, or annual predicted concentrations.

- The Rough Terrain Diffusion Model (RTDM) will be used to evaluate the impact of stack emissions from point sources on terrain above stack height. As with the ISC model, the RTDM will be run using one full year of hourly meteorological data to predict hourly ambient concentration levels.

- The Fugitive Dust Model (FDM) will be used to assess dispersion from material stockpiles, waste dumps, or resuspended dust along roadways.

The modeling will be conducted using the process operations for 1990 to estimate emission rates, and 1990 meteorological data from the 120-foot tower operated by Monsanto at the facility. Emission rates will be based on measured emissions from stack testing or on EPA approved emission factors for material handling operations and wind erosion from open fugitive dust sources. The modeling will evaluate emissions of total suspended particulates (TSP) and inhalable particulates (PM-10) from all sources. In addition, as part of the analysis, the modeling results will include predicted ambient concentrations of cadmium and fluoride for comparison with previous modeling studies.

If you have any questions, please contact us.

Sincerely,

GOLDER ASSOCIATES INC.

William E. Wright
Senior Environmental Scientist

David Banton
Associate

TABLE 6-3

CONSTITUENTS OF INTEREST IN SEDIMENT SAMPLES

Metals	Physical Parameters	Radiological Parameters	Other
Aluminum	Wet Sieve	Potassium-40	pH
Arsenic	Moisture Content	Radium-226	Cation Exchange Capacity
Beryllium	Hydrometer	Radium-228	fluorides
Cadmium	Specific Gravity	Uranium	
Chromium		Lead-210	
Copper		Thorium-228	
Iron		Thorium-230	
Lead		Thorium-232	
Manganese		Polonium-210	
Nickel			
Potassium			
Selenium			
Silver			
Sodium			
Vanadium			
Zinc			

TABLE 6-4

CONSTITUENTS OF INTEREST IN SOIL SAMPLES

Metals	Physical Parameters	Radiological Parameters	Other
Aluminum	Wet Sieve	Potassium-40	pH
Arsenic	Moisture Content	Radium-226	Cation Exchange Capacity
Beryllium	Hydrometer	Radium-228	fluorides
Cadmium	Specific Gravity	Uranium	soluble nitrate/nitrite
Chromium		Lead-210	
Copper		Thorium-228	
Iron		Thorium-230	
Lead		Thorium-232	
Manganese		Polonium-210	
Nickel			
Potassium			
Selenium			
Silver			
Sodium			
Vanadium			
Zinc			

TABLE 6-8

CONSTITUENTS OF INTEREST IN SOURCE MATERIAL SAMPLES[1]

Metals	Physical Parameters	Radiological Parameters	Other
Aluminum	Wet Sieve	Potassium-40	fluorides
Arsenic	Dry Sieve	Radium-226	
Beryllium	Hydrometer	Radium-228	
Cadmium	Specific Gravity	Uranium	
Chromium	Moisture Content	Lead-210	
Copper		Thorium-228	
Iron		Thorium-230	
Lead		Thorium-232	
Manganese		Polonium-210	
Nickel			
Potassium			
Selenium			
Silver			
Sodium			
Vanadium			
Zinc			

[1] Chemical analyses performed on the #200 sieve fraction only.

TABLE 7-2

ANALYTICAL CATEGORIES, METHODS, AND DETECTION LIMITS
FOR SEDIMENT, SURFACE SOIL AND SOURCE MATERIAL SAMPLES

Analytical Category	Analyte of Interest	Reference Method	Detection Limit, mg/kg[1,3]
Metals	Aluminum	USEPA CLP SOW[2]	5
	Arsenic	USEPA CLP SOW	0.4
	Beryllium	USEPA CLP SOW	1
	Cadmium	USEPA CLP SOW	1
	Calcium	USEPA CLP SOW	100
	Chromium	USEPA CLP SOW	2
	Copper	USEPA CLP SOW	1
	Iron	USEPA CLP SOW	5
	Lead	USEPA CLP SOW	1
	Magnesium	USEPA CLP SOW	100
	Manganese	USEPA CLP SOW	1
	Nickel	USEPA CLP SOW	4
	Potassium	USEPA CLP SOW	80
	Selenium	USEPA CLP SOW	0.6
	Silver	USEPA CLP 272.2[4]	0.04
	Sodium	USEPA CLP SOW	8
	Vanadium	USEPA CLP 286.2	0.8
	Zinc	USEPA CLP SOW	1.6
Radiochemical	Uranium, total	EMSL[11]	0.2 mg/kg
	Lead-210	EMSL[11]	0.1 pCi/g
	Polonium-210	EMSL[13]	1.0 pCi/g
	Thorium-228, 230, 232	EMSL[11]	10.0 pCi/g
	Uranium, natural	EMSL[11]	0.2 mg/Kg
	Potassium-40	EMSL[11]	10.0 pCi/g
	Radium-226, 228	EMSL[11]	10.0 pCi/g
Anions	Fluoride	USEPA Method 340.2[5]	1.0
	NO_3/NO_2	USEPA Method 9056[6,12]	1
Other[7]	pH	USEPA Method 9045[6]	NA
	Cation Exchange Capacity	USEPA Method 9081[6]	1 meq/100 gm
Physical	Sieve	ASTM D-422	NA
	Sieve	ASTM C-136-84a[9]	NA
	Hydrometer	ASTM D-422-63	NA
	Specific Gravity	ASTM D-854-83	NA
	Moisture Content	ASTM D-2216-90	NA

1 Detection limits are based on reasonable limits achievable by laboratories using CLP SOW.
2 USEPA Contract Laboratory Program Statement of Work for Inorganic Analyses, (EPA, 1990).
3 Detection limit units are mg/kg unless stated otherwise.
4 Methods for Chemical Analyses of Water and Wastes, (EPA 600/4-79-020, 1983)
5 Determination of Inorganic Ions in Water by Ion Chromatography - Methods 300, (EPA-600/4-87-017, 1984).
6 Test Methods for Evaluating Solid Waste, (EPA SW-846, 1986)
7 pH and cation exchange capacity analyses will be conducted on the 0-6 inch interval surface soil samples only
8 Eastern Environmental Radiation Facility, Radiochemistry Procedures Manual, (EPA 520/5-84-006).
9 This method utilizes dry sieve analysis and is used here in order to estimate wind erosion. This method will be used on the source material samples only in addition to procedure ASTM-D-422.
10 EML Procedures Manual, 25th Edition, Environmental Measurements Laboratory, U.S. Department of Energy, 376 Hudson St., New York, New York.
11 Radiochemical Analytical Procedures for Analysis of Environmental Samples, USEPA, Environmental Monitoring and Support Laboratory, Las Vegas, Nevada, EMSL-LV-0539-17.
12 Deionized water extraction.
13 Federal Register, Vol. 48, No. 67, Wednesday, April 6, 1983; and EML Procedures Manual, 25th Edition, Environmental Measurements Laboratory, U.S. Dept. of Energy, 376 Hudson Street, New York, New York.
NA Not Applicable

Accu-Labs Research, Inc.

4663 Table Mountain Drive Golden, Colorado 80403-1650
(303) 277-9514 FAX (303) 277-9512

913-1101.207
IC Newton
Angelos
File

913-1101.

October 21, 1991

Mr. Kent Angelos
Golder Associates
4104 148th Ave. NE
Redmond, WA 98052

Dear Kent,

As per our conversation on Friday, October 18, 1991, I am including the following two method references which you requested.

1. Gamma Spectrometry: Will identify and quantify the following radionuclides with corresponding detection limits (MDA).

   A. Pb-210 @ 46 KEV (MDA = 0.1 pCi/g dry)
   B. Th-234 @ 63 KEV or 93 KEV (U-238 daughter) (MDA = 0.1 pCi/g dry)
   C. Ra-226 @ 186 KEV (MDA = <10 pCi/g dry) (assuming no U-235 interference)
   D. Pb-214 @ 295 KEV or 352 KEV (Ra-226 Daughter) (MDA = <10 pCi/g dry)
   E. Bi-214 @ 609 KEV or 1120 KEV or 1764 KEV (Ra-226 daughter) (MDA = <10 pCi/g dry)
   F. Ac-228 @ 338 KEV or 911 KEV or 968 KEV (Ra-228 daughter) (MDA = <10 pCi/g dry)
   G. K-40 @ 1460 KEV (MDA = <10 pCi/g dry)

   Reference: EMSL-LV-0539-17, Radiochemical Analytical Procedures for Analysis of Environmental Samples, U.S. Environmental Protection Agency, Environmental Monitoring Support Laboratory, Las Vegas, Nevada.

2. Po-210 in solids using Po-209 as an internal tracer: (MDA = <1 pCi/g)

   Reference: Federal Register, Vol. 48, No. 67, Wednesday, April 6, 1983; and
   EML Procedures Manual, 25th Edition, Environmental Measurements Laboratory, U.S. Department of Energy, 376 Hudson Street, New York, New York.

913-1101-207

Accu-Labs Research, Inc.

4663 Table Mountain Drive Golden, Colorado 80403-1650
(303) 277-9514 FAX (303) 277-9512

November 27, 1991

Mr. David Banton
Golder Associates
4104 148th Ave. NE
Redmond, WA 98052

Dear David,

Enclosed is an updated list, showing the expected completion dates on all your samples we have in-house. We will keep you informed if this list changes.

Sets 40265, 40296 and 40335 are waiting on Ra-228 to be completed. Set 40354 is waiting on Gross Alpha and Ra-226 to be completed. The remainder of the sets are in progress.

If you would like a partial report on any of these sets, please let us know and we will send it out to you.

If you have any questions, feel free to contact me.

Sincerely,

Judy Devereux
Assistant Supervisor
Radiochemistry

JD/dh
Enclosure

cc: Kathy Smit

Accu-Labs Research, Inc.

STATUS REPORT - GOLDER ASSOCIATES
DATE: 11-27-91
PREPARED BY: JUDY DEVEREUX
ACKNOWLEDGED BY: BUD SUMMERS

ALR Number	Projected Completion Date	Revised Completion Date
8734-40265-11	11-29-91	12-9-91
8734-40296-6	11-29-91	12-9-91
8734-40306-34	1-3-92	1-24-92
8734-40335-6	12-6-91	12-16-91
8734-40354-10	12-6-91	12-9-91
8734-40377-5	12-6-91	12-20-91
8734-40392-9	12-6-91	12-20-91
8734-40420-21	12-20-91	1-3-92
8734-40422-6	12-20-91	1-24-92
8734-40442-5	12-20-91	1-3-92
8734-40464-1	12-20-91	1-3-92
8734-40465-29	1-3-92	1-31-92